

In the Claims

Please cancel claims 1-40, without prejudice.

Please add the following new claims:

41 (New). A method for detecting or diagnosing an endometrial irregularity in a female animal, said method comprising screening an endometrial tissue, an endometrial fluid, serum, saliva, or urine from the female animal for an abnormal level of an endometrial bleeding associated factor (*ebaf*) nucleic acid, or a protein encoded by an *ebaf* nucleic acid, wherein an abnormal level of said *ebaf* nucleic acid or said protein encoded by an *ebaf* nucleic acid is indicative of an endometrial irregularity in the female animal.

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42 (New). The method according to claim 41, wherein said *ebaf* nucleic acid is RNA and said method comprises detecting the level of *ebaf* RNA by screening by Northern blot analysis.

43 (New). The method according to claim 41, wherein said method comprises determining the level of said protein encoded by said *ebaf* nucleic acid using an antibody or antisera that specifically binds to said protein.

44 (New). The method according to claim 43, wherein said method comprises screening by Western blot analysis.

45 (New). The method according to claim 43, wherein said method comprises screening using immunohistochemical staining.

46 (New). The method according to claim 41, wherein said endometrial irregularity is infertility.

47 (New). The method according to claim 41, wherein said endometrial irregularity is endometriosis.

48 (New). The method according to claim 41, wherein said endometrial irregularity is abnormal uterine bleeding.

✓ 49 (New). A diagnostic tool for determining the presence of endometrial irregularities in a female animal comprising:

screening means for screening an endometrial tissue, endometrial fluid, serum, saliva, or urine for the presence of an *ebaf* nucleic acid, or a protein encoded by an *ebaf* nucleic acid.

50 (New). The diagnostic tool according to claim 49, wherein said screening means comprises a nucleic acid that specifically hybridizes with said *ebaf* nucleic acid.

F' 51 (New). The diagnostic tool according to claim 49, wherein said screening means comprises a nucleic acid that specifically hybridizes with *ebaf* mRNA.

52 (New). The diagnostic tool according to claim 49, wherein said screening means comprises an antibody or antisera that specifically binds to said protein encoded by said *ebaf* nucleic acid.

53 (New). The diagnostic tool according to claim 49, wherein said screening means comprises an immunohistochemical stain.

✓ 54 (New). A method for determining or diagnosing endometrial receptivity level of a female animal, said method comprising determining whether the level of an *ebaf* nucleic acid, or a protein encoded by an *ebaf* nucleic acid, in an endometrial tissue sample, an endometrial fluid sample, a serum sample, a saliva sample, or a urine sample of the female animal is present at a level indicative of endometrial receptivity.

55 (New). The method according to claim 54, wherein said level of said protein encoded by said *ebaf* nucleic acid is determined by immunoassay.

56 (New). The method according to claim 54, wherein said level of said protein encoded by said *ebaf* nucleic acid is determined by immunohistology.

57 (New). The method according to claim 54, wherein said level of said *ebaf* nucleic acid is determined by polymerase chain reaction (PCR) analysis.

58 (New). The method according to claim 54, wherein said *ebaf* nucleic acid is RNA and the level of *ebaf* RNA is determined by Northern blot analysis.

59 (New). The method according to claim 54, wherein said level of said protein encoded by said *ebaf* nucleic acid is determined using an antibody or antisera that specifically binds to said protein.

60 (New). The method according to claim 59, wherein said level of said protein encoded by said *ebaf* nucleic acid is determined by Western blot analysis.

61 (New). A method for diagnosis and prognosis of infertility in a female animal, said method comprising determining the level of an *ebaf* nucleic acid, or the level of a protein encoded by an *ebaf* nucleic acid, in an endometrial sample, endometrial fluid, a serum sample, a saliva sample, or a urine sample from the female animal; and correlating said level of *ebaf* nucleic acid or said level of said protein encoded by said *ebaf* nucleic acid with normal levels so as to provide a diagnosis or prognosis of infertility in the female animal.

62 (New). A method for diagnosis and prognosis of endometriosis in a female animal, said method comprising determining the level of an *ebaf* nucleic acid, or the level of a protein

encoded by an *ebaf* nucleic acid, in an endometrial sample, endometrial fluid, a serum sample, a saliva sample, or a urine sample from the female animal; and correlating said level of *ebaf* nucleic acid or said level of said protein encoded by said *ebaf* nucleic acid with normal levels so as to provide a diagnosis or prognosis of endometriosis in the female animal.

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63 (New). A method for diagnosis and prognosis of menometrorrhagia in a female animal, said method comprising determining the level of an *ebaf* nucleic acid, or the level of a protein encoded by an *ebaf* nucleic acid, in an endometrial sample, endometrial fluid, a serum sample, a saliva sample, or a urine sample from the female animal; and correlating said level of *ebaf* nucleic acid or said level of said protein encoded by said *ebaf* nucleic acid with normal levels so as to provide a diagnosis or prognosis of menometrorrhagia in the female animal.

64 (New). An isolated antibody that specifically binds to a protein encoded by an *ebaf* nucleic acid.

65 (New). The antibody according to claim 64, wherein said antibody is a monoclonal antibody.

66 (New). An isolated antibody that specifically binds to a peptide having the amino acid sequence shown in SEQ ID NO. 3.

67 (New). The antibody according to claim 66, wherein said antibody is a monoclonal antibody.

68 (New). An isolated antisera that specifically binds to a protein encoded by an *ebaf* nucleic acid.

69 (New). An isolated antisera that specifically binds to a peptide having the amino acid sequence shown in SEQ ID NO. 3.

70 (New). An isolated peptide consisting of the amino acid sequence shown in SEQ ID NO. 3.

71 (New). A contraceptive composition comprising an effective amount of a protein encoded by an *ebaf* nucleic acid in a pharmaceutically-acceptable carrier.

72 (New). A method for increasing the fertility of a female animal, said method comprising decreasing the level of expression of an *ebaf* nucleic acid, or the production or biological activity of a protein encoded by an *ebaf* nucleic acid in the female animal.

73 (New). A method for decreasing the fertility of a female animal, said method comprising increasing the level of expression of an *ebaf* nucleic acid, or the production or biological activity of a protein encoded by an *ebaf* nucleic acid in the female animal.

74 (New). A kit comprising in one or more containers, an antibody that specifically binds to a protein encoded by an *ebaf* nucleic acid.

75 (New). The kit according to claim 74, wherein said antibody is a monoclonal antibody.

76 (New). A kit comprising in one or more containers, an antibody that specifically binds to a peptide having the amino acid sequence shown in SEQ ID NO. 3.

77 (New). The kit according to claim 76, wherein said antibody is a monoclonal antibody.

78 (New). A kit comprising in one or more containers:

- a) an antisera that specifically binds to a protein encoded by an *ebaf* nucleic acid, or
- b) an antisera that specifically binds to a peptide having the amino acid sequence shown in SEQ ID NO. 3, or
- c) an antisera that specifically binds to a protein encoded by an *ebaf* nucleic acid and a peptide having the amino acid sequence shown in SEQ ID NO. 3.

79 (New). A kit comprising in one or more containers:

- a) a protein encoded by an *ebaf* nucleic acid; or
- b) a peptide consisting of the amino acid sequence shown in SEQ ID NO. 3.

80 (New). A kit comprising in one or more containers:

- a) an oligonucleotide primer that primes amplification of an *ebaf* nucleic acid in a polymerase chain reaction (PCR), or
- b) a detectable oligonucleotide probe that specifically binds to an *ebaf* nucleic acid sequence, or
- c) both said primer and said probe.